## Amendments to the Specification

Please replace paragraph [0002] with the following amended paragraph:

[0002] Recent advances in high speed semiconductor integrated circuit technology ~~has~~ have resulted in semiconductor devices which are smaller and run faster than ever before. Such semiconductor devices also generate more heat than ever before. In order to ensure good performance and reliability of the semiconductor devices, their operational temperatures must be kept within a suitable range. Typically, a heat sink is attached to a surface of a semiconductor ~~device ,~~ device, such as a central processing ~~unit(CPU)~~ unit (CPU), so that heat is transferred from the semiconductor device to ambient air via the heat sink. When attaching the heat sink to the semiconductor device, respective surfaces of the device and heat sink are brought into intimate contact with each other. However, as much as 99% of the respective surfaces are separated from each other by a layer of interstitial air, no matter how precisely the heat sink and the semiconductor device are manufactured. Therefore, a thermal interface material is used to eliminate air gaps between the heat source and heat sink to improve heat flow.

Please replace paragraph [0003] with the following amended paragraph:

[0003] Conventional thermal interface materials are thermally conductive compounds prepared by dispersing a plurality of thermally conductive fillers in a polymer matrix. The thermally conductive fillers can be graphite, boron nitride, silicon oxide, alumina, and so on. A typical thermal conductivity of the conventional thermal interface materials is only about 1W/mK, since the polymer matrix has poor thermal conductivity. With the decreasing size and increasing speed of semiconductor devices, such as a CPU, heat dissipating requirements are increasing. To aid in solving the heat dissipation problem, an improved thermal

interface material with a higher thermal conductivity is desired[[,]]. ~~one~~ One way to achieve this is to change the thermally conductive fillers in the polymer matrix. ~~Doing~~ By doing this, an improvement of up to 4~8W/mK can be ~~made~~ achieved. However, adding thermally conductive fillers into the polymer matrix helps only up to a point. ~~Beyond that point~~ If too many thermally conductive fillers are added, the polymer matrix loses its original performance[[,]]. ~~and~~ In particular, the polymer matrix can become stiffer[[,]] and less flexible, and the soakage effect ~~will~~ may be worsened ~~worse than ever before~~. The thermally conductive characteristics of thermal interface materials have thus been limited for the above reasons.

Please replace paragraph [0005] with the following amended paragraph:

**[0005]** In order to achieve the object set out above, a thermal interface material in accordance with the present invention comprises a polymer matrix and a plurality of carbon nano-capsules incorporated in the polymer matrix. The polymer matrix is generally a reaction product of a polyether polyol and an isocyanate. The carbon nano-capsules can be enclosed with ~~highly thermal~~ high thermally conductive materials or can be filled with metal nano-grains having high thermal conductivity.

Please replace paragraph [0007] with the following amended paragraph:

**[0007]** FIG. 1 is a schematic side elevation view of an electronic assembly using the thermal interface material[[,]] in accordance with the preferred embodiment of the present invention.

Please replace paragraph [0008] with the following amended paragraph:

**[0008]** The following description of illustrative examples and embodiments of

the present invention is in connection with an electronic assembly, in which a semiconductor chip (that is a heat source) is positioned on a printed circuit board. However, the present invention is not limited to such ~~kind~~ kinds of electronic assemblies, nor indeed the electronic assembly shown in FIG. 1. The thermal interface material of the present invention can provide a maximum contact area with a heat source and a heat sink, even if the heat source and/or the heat sink has rough or uneven contact surfaces. The thermal interface material is still efficacious in transferring heat from the heat source to the heat sink.

Please replace paragraph [0010] with the following amended paragraph:

**[0010]** The thermal interface material of the present invention utilizes a plurality of carbon nanocapsules incorporated in a polymer matrix. The present invention employs carbon nanocapsules, which are ~~polyhedron~~ polyhedral carbon clusters, and which are formed by a carbon sphere encircling another sphere. The carbon nanocapsules may be hollow or filled with metal, and may be spherical, ellipsoid, or capsule-shaped. A diameter of each carbon nanocapsule is in the range from 5~50nm, with an average diameter of 30nm. Therefore the thermal interface material employing carbon nanocapsules can be made thinner than those which employ metal grains therein.

Please replace paragraph [0015] with the following amended paragraph:

**[0015]** Furthermore, metallic nano-grains having high thermal conductivity can be received in the carbon nanocapsules, to improve the heat conductivity of the carbon nanocapsules. The metallic nano-grains can be selected from copper, silver and/or phosphor bronze. Phosphor bronze preferably includes 96.5% copper, 3.5~4.5% tin, 0.03~0.35% phosphorus, less than 0.5% lead, less than 0.1%

iron, and less than 0.5% zinc.

Please replace paragraph [0016] with the following amended paragraph:

**[0016]** FIG. 1 illustrates an electronic assembly which is a typical application of the thermal interface material ~~in~~ of the present invention. The electronic assembly comprises a heat source 30, a heat sink 50, and a thermal interface material 40. The thermal interface material 40 is sandwiched between the heat source 30 and the heat sink 50. The heat source 30 is fastened onto a mother board 10 via solder balls 25 and a connector 20. A first surface 41 of the thermal interface material 40 contacts a top surface 31 of the heat source 30, and a second surface 42 of the thermal interface material 40 contacts a bottom surface 52 of the heat sink 50. The thermal interface material 40 is a pliable material, as described in more detail below. The thermal interface material 40 provides improved thermal contact between the heat source 30 and heat sink 50, even in the case when either or both of the top surface 31 of heat source 30 and the bottom surface 52 of heat sink 50 are uneven. Moreover, because the thermal interface material 40 is pliable, it can act as a mechanical isolator to protect fragile components during structural loading and in environments where shock and vibration may be sustained.

Please replace paragraph [0017] with the following amended paragraph:

**[0017]** The carbon nanocapsules ~~disturbed~~ distributed in the polymer matrix material are rigid, but the polymer matrix material itself is a pliable material. When the thermal interface material 40 is compressed during attachment of the heat sink 50 to the heat source 30, points of contact ~~contacts~~ between adjacent carbon nanocapsules in the polymer matrix material are reinforced. Furthermore,

some of the carbon nanocapsules can directly contact the top surface 31 of the heat source 30 and the bottom surface 52 of the heat sink 50.